SHARP

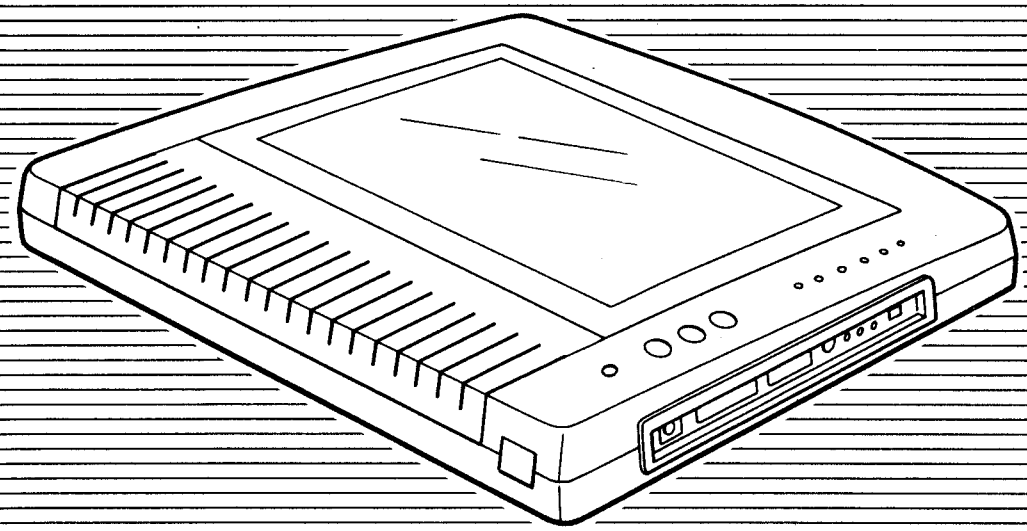
COLOR COMPUTER/VIDEO PROJECTION PANEL
ECRAN DE PROJECTION COULEUR POUR VIDEO/ORDINATEURS
COMPUTER/VIDEO-PROJEKTIONSPANEL
PANNELLO DI PROIEZIONE A COLORI PER COMPUTER/VIDEO
PANEL DE PROYECCIÓN EN COLOR PARA COMPUTADORA/VIDEO
KLEUREN COMPUTER/VIDEO-PROJECTIEPANEEL

MODEL
MODELE
MODELL
MODELLO
MODELO
MODEL

QA-1150

OPERATION MANUAL
MODE D'EMPLOI
MANUAL DE INSTRUCCIONES

BEDIENUNGSANLEITUNG
MANUALE D'ISTRUZIONI
GEBRUIKSAANWIJZING



QA-1150

OPERATION MANUAL
ENGLISH ——— 1~50

MODE D'EMPLOI
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SPECIAL NOTES

Thank you for purchasing this SHARP Product. We hope it will give you many years of trouble-free operation. But for the best performance, read this manual carefully. It will guide you in operating your SHARP product.

The Sharp Computer/Video Projection Panel incorporates the latest in Thin Film Transistor Liquid Crystal Display technology. While this LCD is capable of producing projected images which are bright and high in contrast, please note that all liquid crystal displays also have very strict maximum temperature limitations. This projection panel should not be used with any overhead projector (or in any environment) which might cause the operational temperature of the LCD to exceed **45°C (113°F)**.

This projection panel should only be used with high quality **transmissive** type overhead projectors. It is not designed to be used with the compact reflective mirror type overhead projectors. For the best colormetry and brightness, a high luminosity type O.H.P (overhead projector) using a metal-halide lamp (Approx. .500W) with high cooling ability is recommended.

This projection panel should not be used in rooms with very bright lighting. For best results, the lights in the room should be dimmed.

FOR YOUR RECORDS

Please record below, the model and serial numbers, located on the bottom of the unit. Please retain this information for reference in cases of theft and for service repair.

Model number: **QA-1150**

Serial number: _____

Date of purchase: _____

Place of purchase: _____

The following items referred to in this manual are not included with this unit: personal computers, overhead projectors, computer software, and carrying cases. Please contact your Sharp dealer for information on purchasing these items.

1. INTRODUCTION

The Sharp QA-1150 Computer/Video Projection Panel makes it possible to project computer display images onto a large screen or wall, using an overhead projector to illuminate and project the images.

- The QA-1150 uses an active matrix TFT LCD panel to allow up to 185,000 colors to be displayed. When the QA-1150 is placed on an overhead projector, the text, graphics, and other visuals produced by a personal computer can be enlarged. This enlarged information will allow large groups to view the output of a personal computer. This greatly facilitates presentations in environments such as conferences, seminars, and classrooms.
- The display area has 640(RGB) × 480 dots, allowing display of bright, sharp images. The display is compatible with many different types of personal computers: using the cables provided, it can be connected directly to any IBM® PS/2, PC XT/AT or compatible computers equipped with VGA, MCGA, EGA, CGA, MDA, Hercules®/Plus/Incolor card and Macintosh II series.
- The projection panel has a built-in video adapter, which outputs a composite video signal for PAL or NTSC standards.
- There is also an external video monitor output connector, allowing a computer monitor to be connected for simultaneous display with the QA-1150.
- A rear-screen projection function allows the projected image to be reversed if the projector is behind the screen.

2. DESCRIPTION OF MAIN COMPONENTS

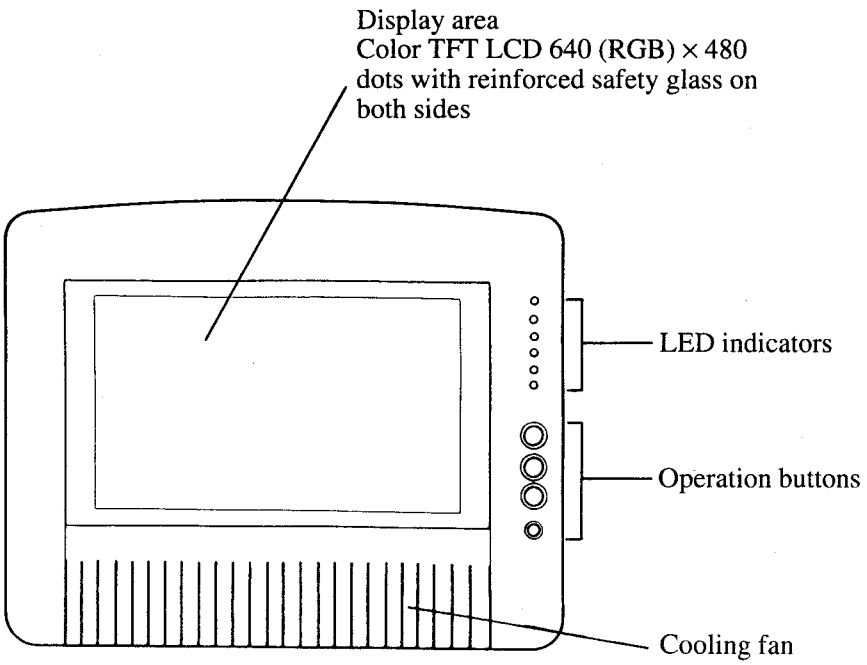
Unpack and check that all of the components are included in the shipping carton. Please keep this Operation Manual for future reference.

Items included are:

- Main unit
- Remote control unit
- VGA/MCGA signal cable
- Macintosh II signal cable
- External Macintosh monitor cable
- AC adaptor
- AC cable
- Two "AA" alkaline batteries for remote control unit
- Operation Manual
- Video adjustment tool

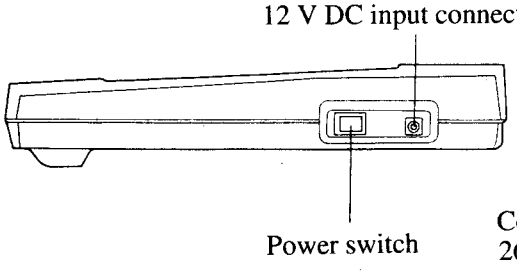
Main unit

Top view

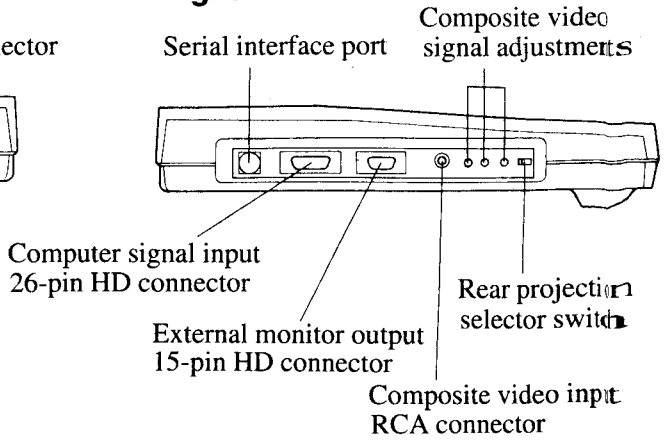

Display area
Color TFT LCD 640 (RGB) × 480 dots with reinforced safety glass on both sides
LED indicators
Operation buttons
Cooling fan

Side view

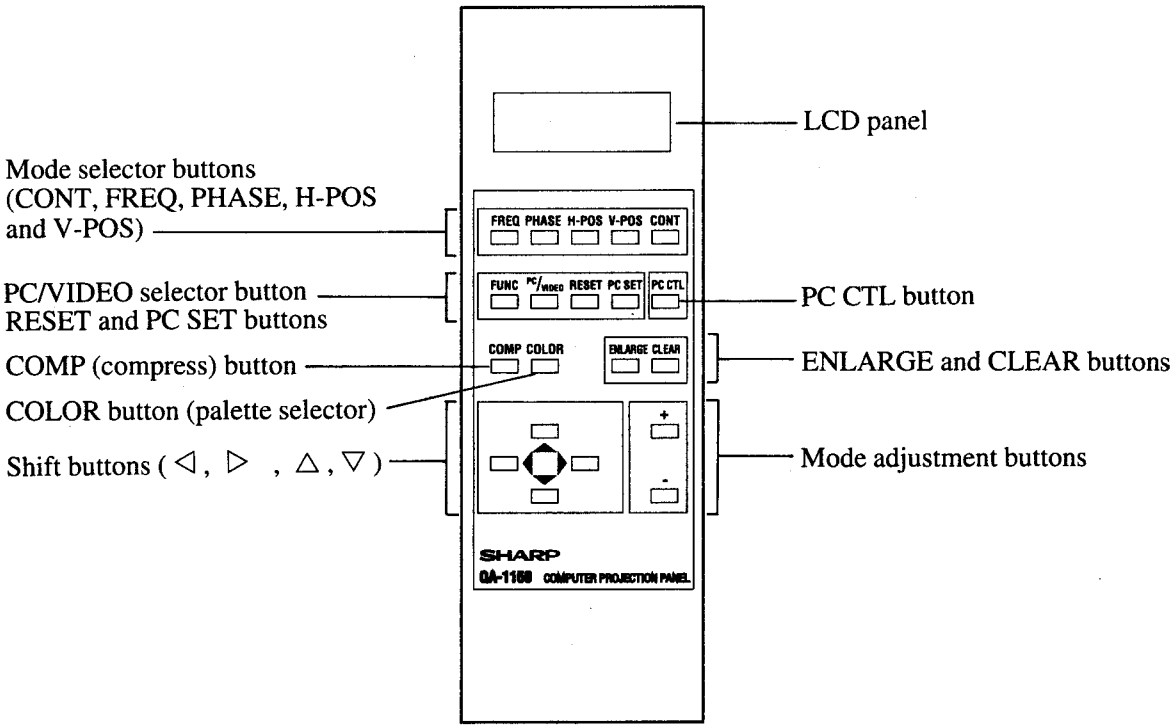
Left



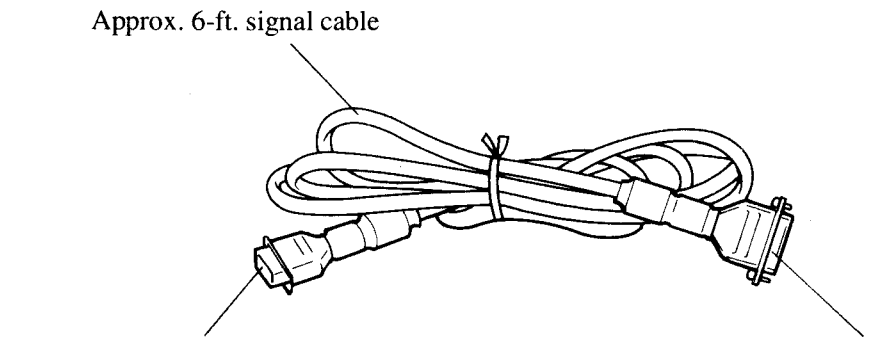
Right


Serial interface port
Composite video signal adjustments
Computer signal input 26-pin HD connector
External monitor output 15-pin HD connector
Rear projection selector switch
Composite video input RCA connector

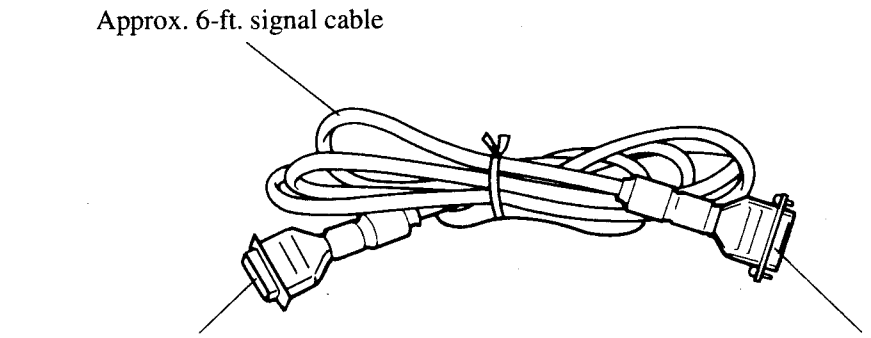
Remote control unit



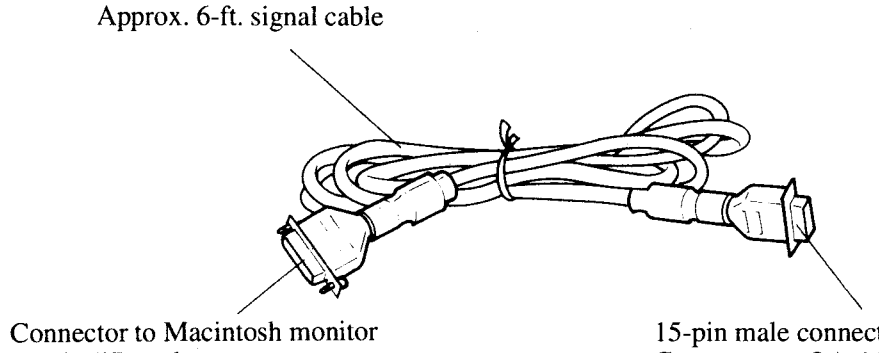
VGA/MCGA Signal Cable (DSOCZ2020YAZZ)


Approx. 6-ft. signal cable
Connector to personal computer (VGA or MCGA)
15-pin HD male connector
26-pin HD male connector
Connector to QA-1150 panel

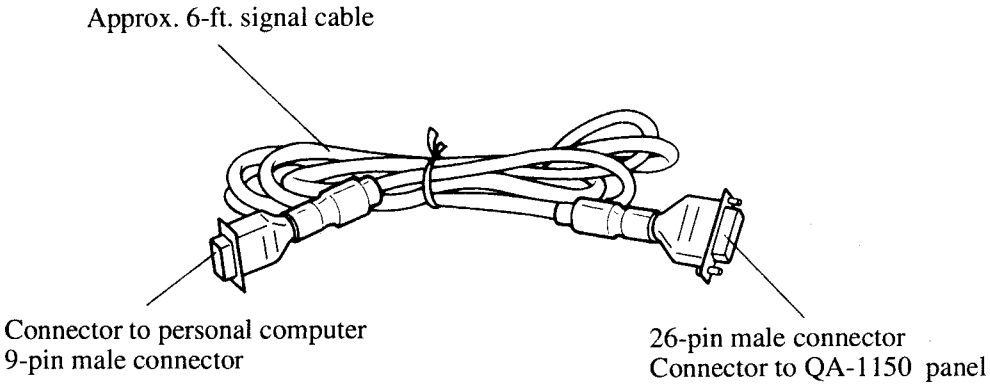
Macintosh II Signal Cable (DSOCZ2016YAZZ)


Approx. 6-ft. signal cable
Connector to personal computer
15-pin male connector (Apple® Macintosh II or LC)
26-pin HD male connector
Connector to QA-1150 panel

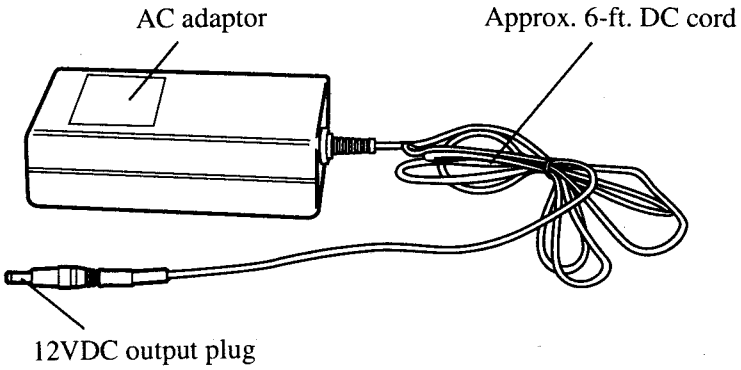
External Macintosh Monitor Cable (DSOCZ2017YAZZ)

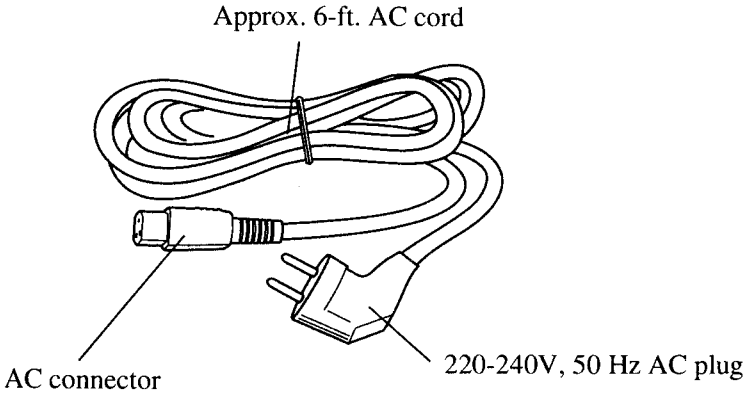


OPTIONAL: EGA/CGA Signal Cable (DSOCZ2004YAZZ)



AC Adaptor (DADP-2001YAZZ)/AC Cable





3. DIRECTIONS FOR USE

SETTING UP

Set up the QA-1150 as follows.

The QA-1150 should not be used with any overhead projector which may cause the panel's internal LCD to reach temperature of 45°C(113°F).

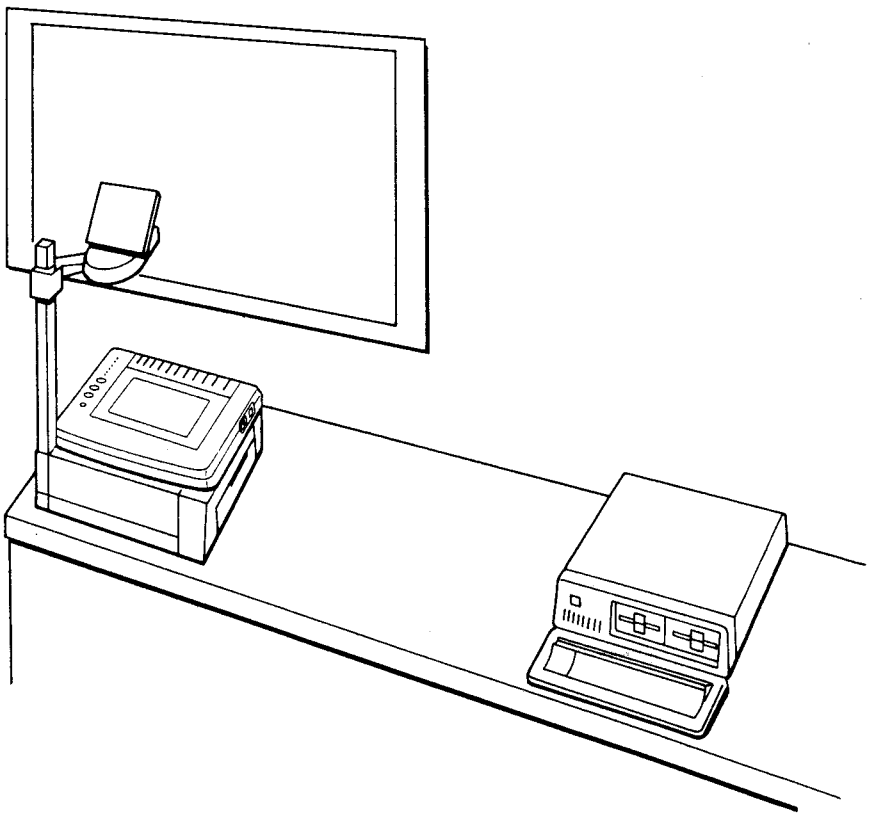
Positioning

1) Turn on the power of the overhead projector and place it in the best position for projection against a wall or screen. Turn OFF the overhead projector.
2) Place your personal computer in a convenient position next to the overhead projector. The 6-foot DC cord and RGB signal cable allow positioning to fit a variety of projection requirements.
3) Place the QA-1150 on the overhead projector. The QA-1150 should be placed so that the end with the air intake vent on the top is closest to the wall or screen.

NOTE

Do not leave the QA-1150 sitting on the overhead projector with the panel power off while the OHP's power is turned ON.

Center the panel's display area with the stage area of the overhead projector.



Connection

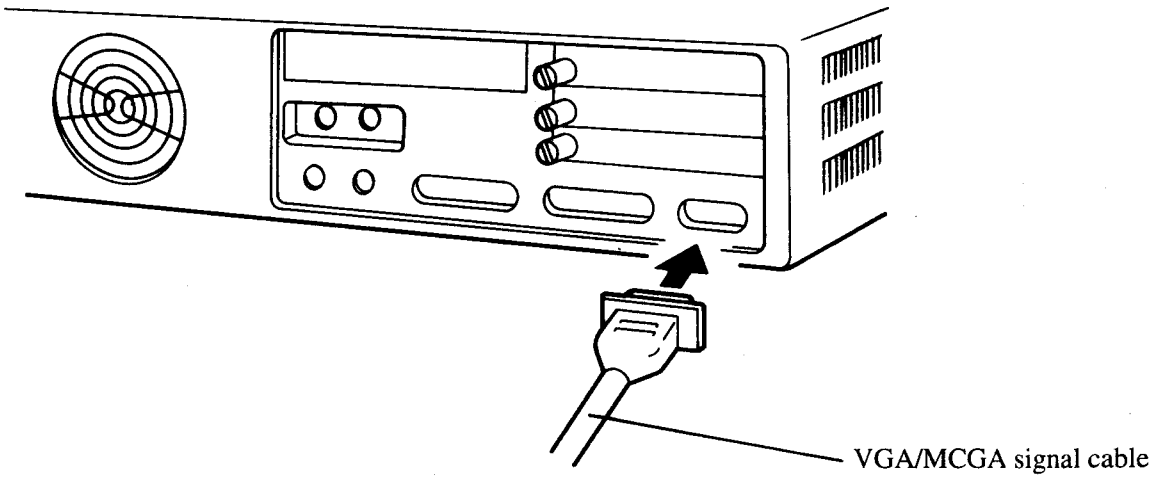
Before making any electrical connections, please make sure that both the overhead projector and the personal computer are turned off.

WARNING

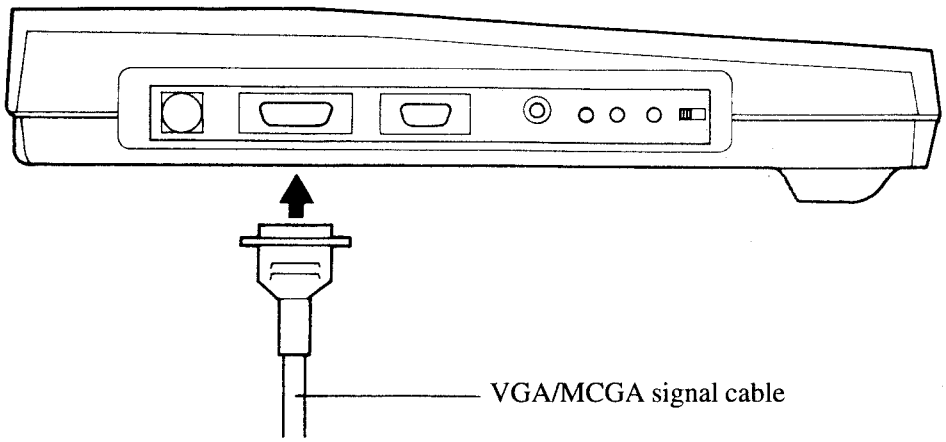
When connecting the QA-1150 to a computer, only use the interface cables provided. Cables for computers which are not VGA/MCGA, Apple® Macintosh II/LC or compatible computers, contact your local dealer. Do not use any other cables to connect the QA-1150 to a computer.

1) Connecting the VGA/MCGA Signal Cable to an IBM® PS/2 or Compatible Computer

The VGA/MCGA signal cable has a 15-pin HD male connector on one end and a 26-pin male connector on the other end.
Plug the 15-pin connector into the 15-pin monitor output connector on the computer.
Use a screwdriver to fasten the connectors securely together (see below).



Plug the 26-pin connector end of the VGA/MCGA cable to the 26-pin signal input connector on the QA-1150. Use a screwdriver to fasten the connectors securely together (see below).

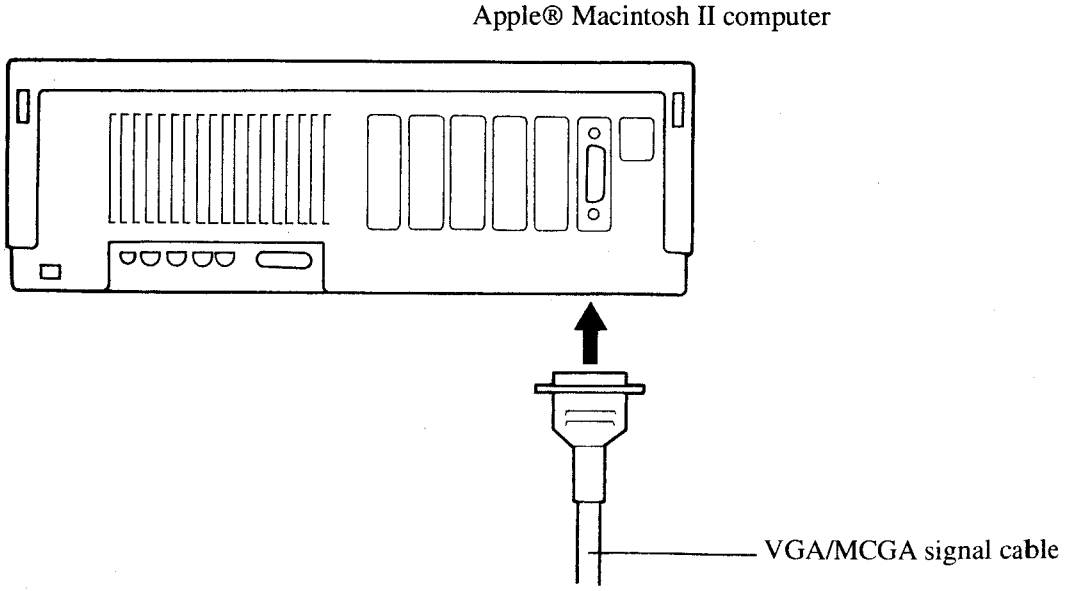


2) Connecting the Macintosh II Signal Cable to an Apple® Macintosh II

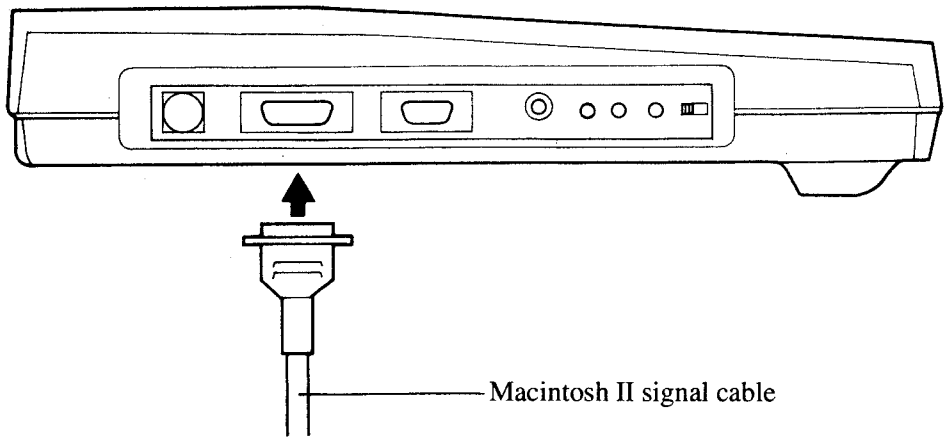
The Macintosh II signal cable has a 15-pin male connector on one end and a 26-pin HD male connector on the other end.

Plug the 15-pin connector into the 15-pin monitor output connector on the computer.

Use a screwdriver to fasten the connectors securely together (see below).



Plug the 26-pin connector end of the Macintosh II cable to the 26-pin signal input connector on the QA-1150.
Use a screwdriver to fasten the connectors securely together (see below).



3) Connecting a Laptop or Note book computer

Most Laptop and Notebook computers have "External Monitor Ports". Please refer to your computr's operation manual for instruction how to connect and access this port. Some software command or switch may have to be set to view on the QA-1150.

NOTE

The QA-1150 is not compatible with the Macintosh laptop. Do not connect the QA-1150 to a Macintosh laptop. Serious damage to the computer or QA-1150 could result.
Third-party adaptors are available for the Macintosh laptop and PowerBook computers. Contact your Authorized Sharp dealer.

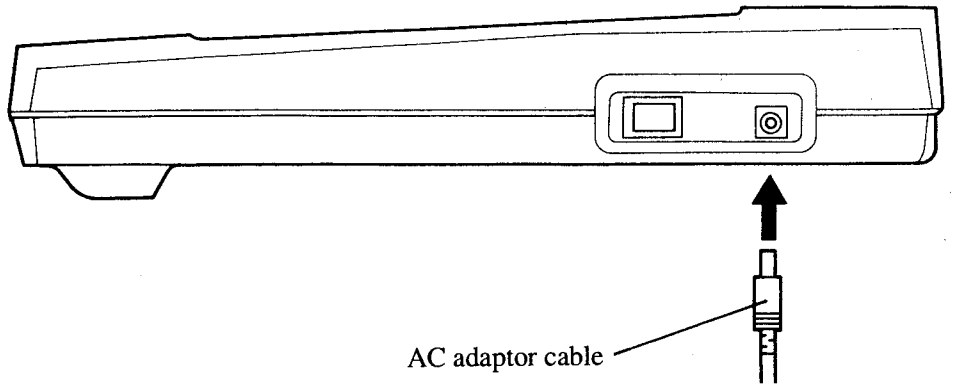
4) Connecting to other Apple Series Computer

Because the Macintosh computers do not have a video connector, you must install an optional internal adaptor. The Macintosh, 512, Plus, SE, SE/30 and Classic require these adaptors are available from your local Authorized Sharp dealer.

5) Power Supply Connection

Plug in the DC output plug of the AC adaptor into the DC INPUT socket on the QA-1150 (see below).

Make sure that the panel's power switch is in the off position, then plug the AC adaptor into an AC outlet.



WARNING

Do not use any other type of AC adaptor with the QA-1150. This AC adaptor is a filtered power supply with a safety standard listing and should not be replaced by any other adaptor. The QA-1150 AC adaptor is not interchangeable with the QA-25 or QA-50 AC adaptor.

6) Composite video input connection

Connect the composite video signal cable to the composite video input connector. Then press the PC/VIDEO button on the remote control unit to switch between the computer video output and the composite video signal.

The unit supports the following video signal standards, and automatically switches between NTSC and PAL: system M (NTSC), systems B, G, H and I (PAL).

Adjusting the video image

The video adjustments are preset at the factroy and should not require any adjustment. If adjustment is required, please use the adjustment tool supplied.
Insert the slotted end of the tool into the control to be adjusted.

Turn the knobs to obtain the most satisfactory result.

① BRIGHT adjustment

This adjusts the brightness of the image.

Turn it clockwise to increase image brightness.

Turn it counterclockwise to decrease image brightness.

② COLOR adjustment

This adjusts the color saturation of the image.

Turn it clockwise to increase color.

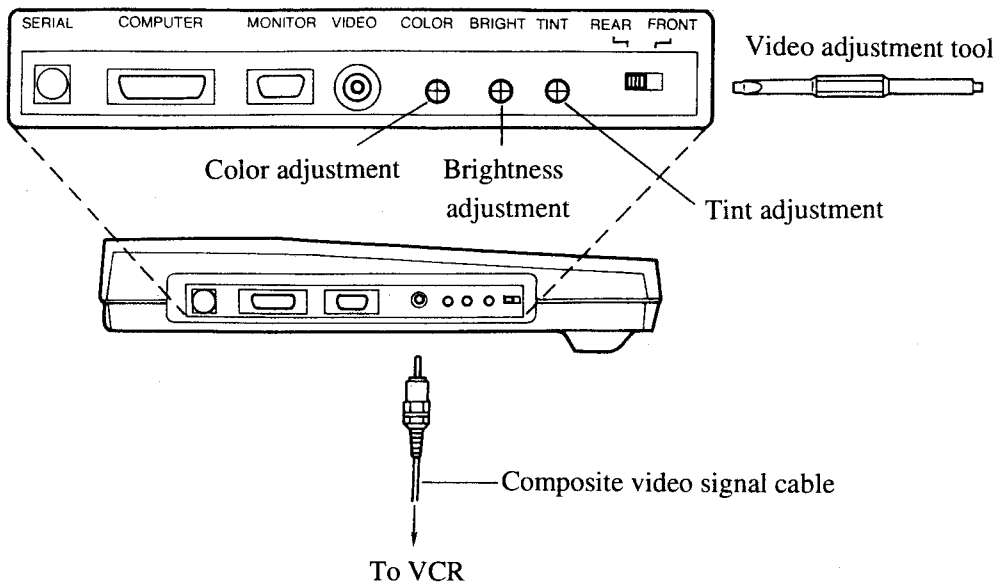
Turn it counterclockwise to decrease color.

③ TINT adjustment

This adjusts the hue of the image. Set it so that flesh tones look natural.

Turn it clockwise to make the hue more green.

Turn it counterclockwise to make the hue more purple.



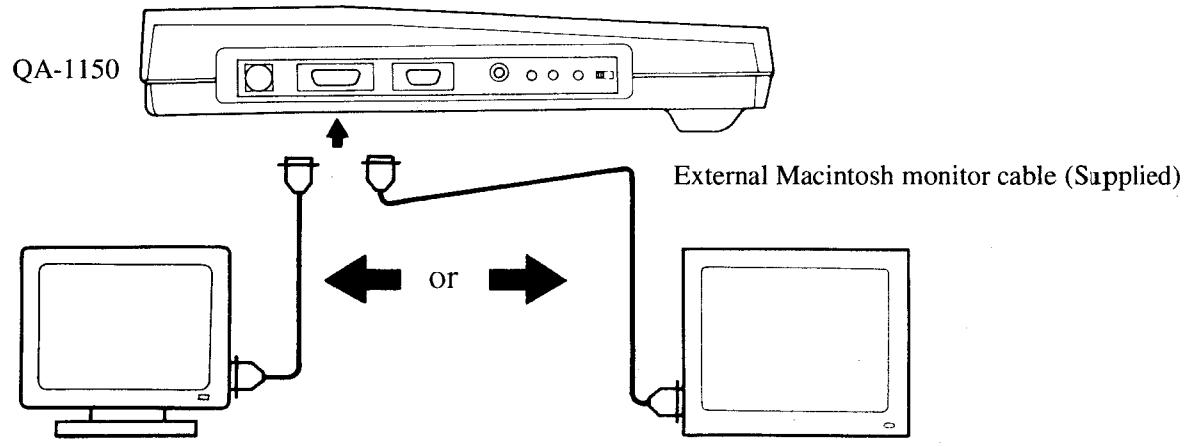
If both a computer and a video signal are connected to the QA-1150 simultaneously, pressing the PC/VIDEO button on the remote control unit switches between the computer video output and the composite video signal.

NOTES

To display NTSC or PAL on the QA-1150, the video signal input must meet the following requirements. If it does not, proper display will not be obtained.
(1) It must be a composite video signal complying with system M (NTSC) or systems B, G, H and I (PAL).
(2) The signal level must be 1.0 V peak-to-peak.
(3) The output impedance must be 75 Ω.
With PAL composite video signals, about 10% is cut from the top, bottom, and sides of the display area. The TINT knob does not work with PAL composite video signals.

7) External monitor connection

Connect a computer monitor to the external monitor output connector. The image appears simultaneously on the external monitor and QA-1150.



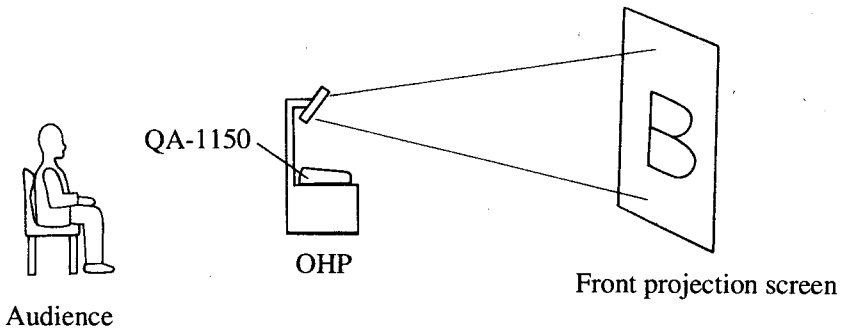
NOTES

When using the QA-1150 together with an external VGA monitor, connect the monitor using the cable supplied with the monitor. When using the QA-1150 together with a Macintosh monitor, connect it using the external Macintosh monitor cable that is supplied with the QA-1150. Before using any other type of monitor, carefully check the monitor's interface specifications and make sure that they match the specifications of the QA-1150's interface.
The external monitor output connector will only display the computer input signal. It will not display the composite video input signal. To split the composite video signal, use a video distribution amplifier. This is available from your local dealer.

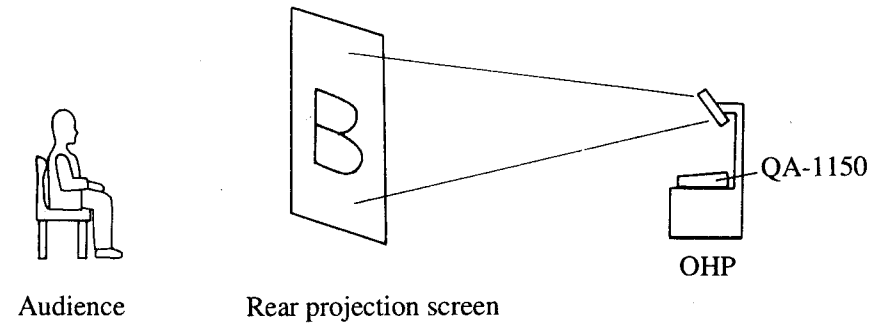
8) Front- and rear-projection

The QA-1150 has a function to enable front- or rear-projection.

(1) Front-projection (projector on the same side of the screen as the audience)

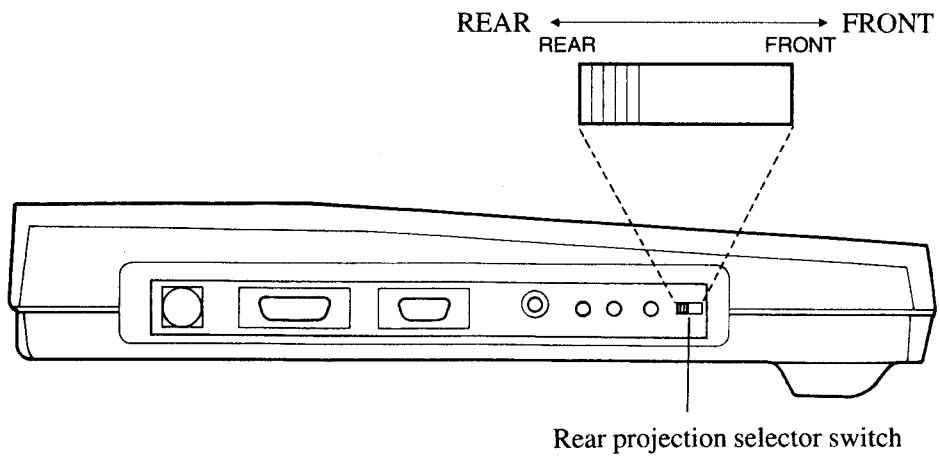


(2) Rear-projection (projector behind the screen)



Slide the selector switch to choose front or rear projection.

Side view



Operation Steps

Before turning power on to the equipment, please note the following precautions.

The QA-1150 should not be used with any overhead projector which may cause the panel's internal LCD to reach a temperature of 45°C (113°F) or higher.

To prevent the QA-1150's LCD from reaching this maximum temperature, a very effective cooling fan is built into the panel. This fan only operates when the QA-1150's power switch is turned ON. Therefore, make sure that the QA-1150 power switch has been turned on first and then turn on the power switch of the overhead projector.

Because the QA-1150 is directly compatible with many systems, it has been provided with a built-in **Automatic Setup System** to enable correct display for most display signals.

- 480-line displays (VGA):
  Displays as a 480-line display.
- 400-line displays (VGA and MCGA):
  The top and bottom 40 lines have no signals, and the image is displayed in the center 400 lines.
- 350-line displays (VGA, MCGA and EGA):
  The top and bottom 65 lines have no signals, and the image is displayed in the center 350 lines.
- 200-line displays (CGA):
  Displayed as a 400-line display. The top and bottom 40 lines have no signals.

NOTES

(1) VGA (720-dot display)
When using a VGA card in the 720-dot mode, the QA-1150 will compress the image to 640 dots. To view the image in the 720-dot mode, press the COMP button on the remote control unit. Only 640-dots will be displayed. To check the remaining portion of the image, select H-POS mode, and use the shift ▽ button on the QA-1150 panel or the - button on the remote control to shift the image left by 80 dots. Pressing the COMP button again returns back to the 640-dot compressed display mode.
(2) MDA, Hercules®
The QA-1150 does not compress these display modes. The QA-1150 will display 640 out of 720 dots. To view the remaining portion of the image on the right side, use the shift ▽ button on the QA-1150 panel or the - button on the remote control unit to shift the image left by 80 dots.

(3) Setting up with the Macintosh II video card and Macintosh LC.
a) After a power reset, the unit is set up for the Macintosh II video card timing.
b) Pressing the COMP button on the remote control unit switches to the timing for the Macintosh LC, High Resolution Mode (640 × 480).
c) Once in the Macintosh LC mode, pressing the COMP button has no effect.
d) Pressing the RESET button on the remote control unit switches back to the timing for the Macintosh II video card.

NOTE

EGA/CGA (MDA/Hercules®) requires an optional cable which is available through your authorized local dealer or parts distributor.

HOW TO OPERATE THE QA-1150 FOR PRESENTATIONS

(1) Turn on the QA-1150 and make sure that the cooling fan is working. (As an indication that the QA-1150 has been properly turned ON, the Red LED power indicator will light.)

(2) Turn on the overhead projector.

(3) Press the RESET button on the remote control unit.

(4) Turn on the PC to display text or graphic images on the QA-1150. Focus the overhead projector so that the images projected are clearly visible on the overhead projector screen.

(5) Use the CONT button on the remote control unit to adjust the contrast of the projected image.

(6) Press the PC/VIDEO button on the remote control unit to switch between the computer video output and the composite video signal.

(7) To clear the screen during a presentation, press the CLEAR button on the remote control unit. When the screen is cleared, press the CLEAR button again to restore the image.

(8) Use the ENLARGE button on the remote control unit to display the center portion of screen enlarged to double the size.

Enlarged mode

Use the shift buttons (▲ , ▼ , ▶ and ◀) on the remote control unit to move the displayed portion of the image. Press the ENLARGE button again to return to normal mode.
(The enlarged mode cannot be used for a video signal from a VCR or other video equipment.)

(9) By connecting to the personal computer with a serial communications cable (available separately), the computer program can be controlled from the remote control unit.

(10) At the end of the presentation the overhead projector should be turned off first. After the overhead projector is turned off, the QA-1150 may be turned off.

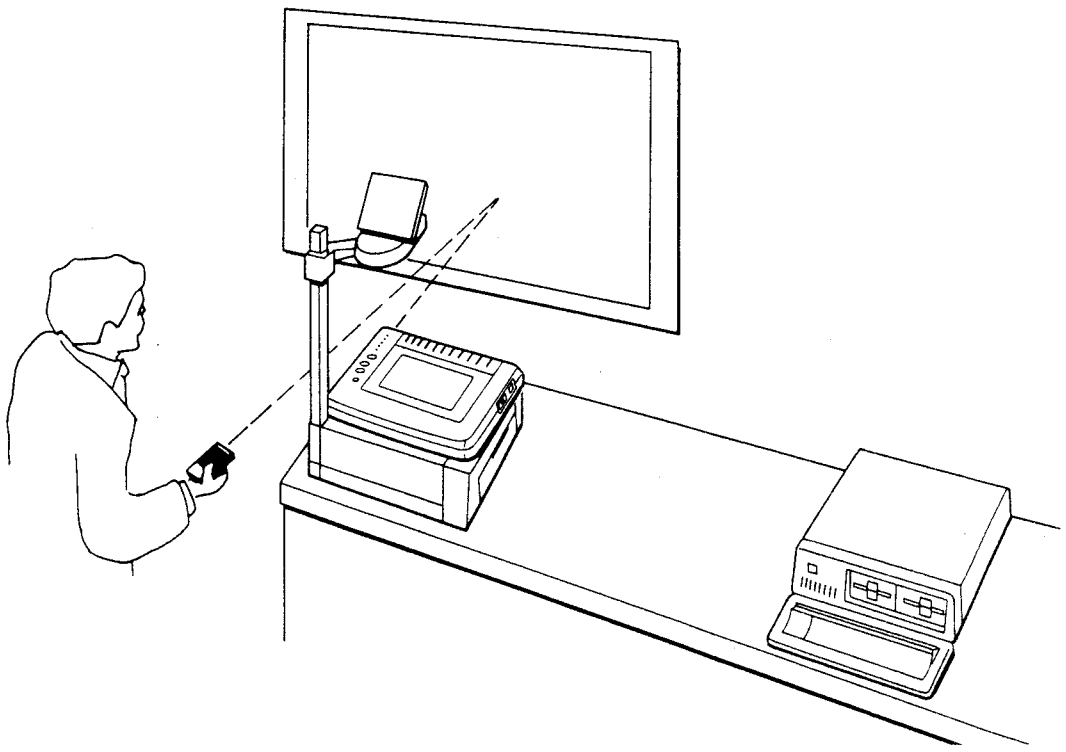
WARNING

1) Do not leave the QA-1150 turned off while the overhead projector is ON. The heat from the overhead projector lamp may damage the display if the QA-1150 fan is not operating.
2) Do not place paper or transparencies over the cooling air inlet of the QA-1150.

NOTE

Remote Control Operation

The signal from the remote control is received by the QA-1150 on the side which faces the projection screen. To operate the QA-1150 from behind the overhead projector, point the remote control towards the screen. The infrared signal will be reflected by the screen towards the QA-1150 and all functions will be controlled.



4. QA-1150 (MAIN UNIT) BUTTON OPERATIONS

The QA-1150 automatically adjusts the LCD display area according to the signal input. For computers whose video output signal specifications match those of the QA-1150 (please refer to pages 39-49). The projected image can be modified by using the control buttons to change the following display parameters.

Modes of adjustment

1) PHASE: Adjust if the display flickers.

2) H-POS: Adjust to move the screen image horizontally.

3) V-POS: Adjust to move the screen image vertically.

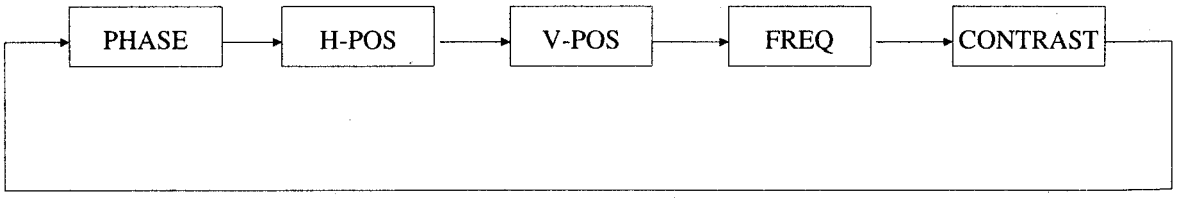
4) FREQ: Adjust to change the data display frequency.

5) CONTRAST: Adjust to change the contrast of the projected image.

NOTE

The QA-1150 control panel buttons do not require a lot of pressure to make contact. Press the buttons slowly and gently. Repeatedly press the buttons for continuous adjustments.

- Selecting the setup mode
  Press the MODE SELECT button to select the item to be adjusted. Verify the item selection by looking at the LED indicator. The item selection shifts through each adjustable parameter in the following sequence every time the MODE SELECT button is pressed.



NOTE

The QA-1150 defaults to the PHASE mode when a computer is connected or by pressing the reset button.

- PHASE adjustment
  Adjust the PHASE if the display flickers. Select the PHASE adjustment mode with the MODE SELECT button, then press the MODE ADJ buttons (△ or ▽) as necessary to eliminate flicker from the display.

  △ : Increases PHASE.

  ▽ : Decreases PHASE.

- H-POS adjustment
  Adjust the H-POS if you need to change horizontal positioning of the image. Select the H-POS adjustment mode with the MODE SELECT button, then press the MODE ADJ buttons (△ or ▽) to adjust positioning as desired.

  △ : Shifts the image to the right.

  ▽ : Shifts the image to the left.

- V-POS adjustment
  Adjust the V-POS if you need to change vertical positioning of the image. Select the V-POS adjustment mode with the MODE SELECT button, then press the MODE ADJ buttons (△ or ▽) to adjust positioning as desired.

  △ : Shifts the image upward.

  ▽ : Shifts the image downward.

- FREQ adjustment
  This adjustment allows you to change the display data frequency to match the frequency of the connected computer. Select the FREQ adjustment mode with the MODE SELECT button, then press the MODE ADJ buttons (△ or ▽) to adjust the frequency.

  △ : Increases the frequency.

  ▽ : Decreases the frequency.

- CONTRAST adjustment
  Use the contrast adjustment function to adjust the contrast of the projected image.

  Use the MODE SELECT button to select the CONTRAST adjustment mode, then press the MODE ADJ buttons (△ or ▽) to adjust the contrast.

  △ : Increases the contrast

  ▽ : Decreases the contrast

NOTES

If the projected image flickers, try using the contrast adjustment to reduce the flicker. In some cases, however, there may be residual flicker which it is not possible to remove.

NOTES

(1) Continuous adjustment is possible for all modes except for the phase adjustment. By pressing a button and holding it down, the adjustment will shift through its range. The PHASE adjustment buttons must be depressed repeatedly.
(2) All modes have a limited adjustment range. For PHASE adjustment, the range loops back and repeats indefinitely in either direction.
(3) The image may scramble or distort if the H-POS, V-POS, or FREQ modes are adjusted too far in either direction.

- RESET
  Pressing the RESET button sets the QA-1150's adjustable modes to the default settings corresponding to the computer currently connected. The contrast adjustment is set to center value. After reset, the adjustments start with the PHASE mode.

- ALL RESET
  Press RESET, then immediately simultaneously press MODE SELECT and MODE ADJ (▽) buttons. This selects default settings for all of the QA-1150's compatible computer video outputs and restores the PC/VIDEO mode selection to the PC setting. All of the LED indicators light while ALL RESET operation is in progress.

NOTE

Never turn the power off on the QA-1150 while the ALL RESET operation is in progress. Otherwise, default values may not be properly set.

- COMP (without using the remote control)
  Press and hold the RESET button, then press MODE ADJ (▽).

  1) When using a VGA card, do this button operation if you want to look at images in the 720-dot mode.
     Afterwards, repeat the button operation to return to the 640-dot compressed display mode.

  2) When using a Macintosh LC, this button operation sets up the display timing of the Macintosh LC. When in the Macintosh LC mode, doing this button operation does not return the display timing to Macintosh II timing.
     The ALL RESET operation, returns the display timing to the Macintosh II timing.

- PC/VIDEO

  To switch the PC/VIDEO mode selection to the PC setting, press and hold the MODE SELECT button, then press the MODE ADJ (▽) button.

  To switch the PC/VIDEO mode selection to the VIDEO setting, press and hold the MODE SELECT button, then press the MODE ADJ (△) button.

  When you turn on the power or do the ALL RESET operation, the PC/VIDEO mode selection is set to the PC setting.

NOTE

The COMP and PC/VIDEO mode settings can be changed from the remote control unit, as well as using the buttons on the QA-1150.

5. REMOTE CONTROL UNIT BUTTON OPERATIONS

The remote control unit has a backlit LCD panel, making the display easy to read.

The remote control unit allows all the necessary operations during a presentation to be carried out from a position away from the QA-1150 (main unit).

PRINCIPAL REMOTE CONTROL FUNCTIONS

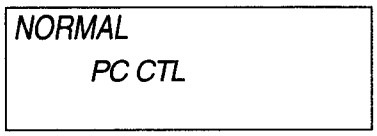
- Display modes: normal, enlarged and clear
- Display adjustments: H-POS, V-POS, phase, frequency and contrast
- Color palette selection: 512 or 185,000 colors
- Computer or video selection
- Reset functions: reset, and mode reset
- (COMP) 720-dot mode image compression
- PC control: PC-SET (setting the serial communications parameters) and PC-CTL (computer program control)

Display mode selection

The remote control unit allows the operator to switch the QA-1150 to any of three display modes: normal, enlarged, and clear.

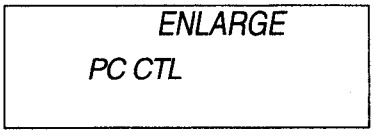
1) Normal mode

In this mode the image is displayed at normal size.
After pressing the RESET button, the unit is in normal mode.
When this mode is selected, it is indicated on the remote control unit LCD as follows.



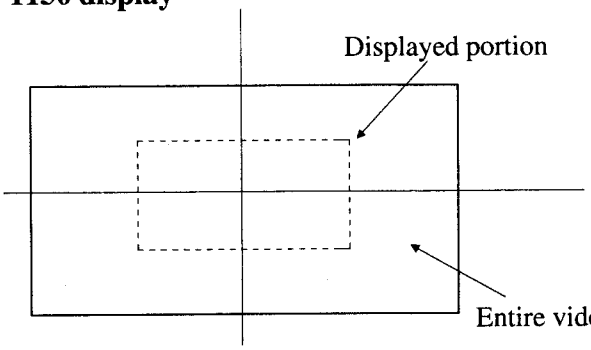
2) Enlarge mode

In this mode the center of the image is shown enlarged to double its size. Pressing the ENLARGE button while in normal mode switches to enlarged mode. This is indicated on the remote control unit LCD as follows.



When this mode is selected, the display zooms in on the central portion of the image. (See the figure below.)
Use the cursor buttons to move the displayed portion about the whole video image.
Press the ENLARGE button to return to the normal mode.

QA-1150 display



SHIFT keys

◀ moves left

▶ moves right

▲ moves up

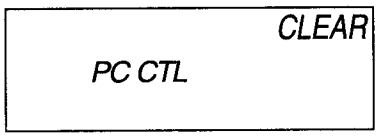
▼ moves down

3) Clear mode

This is the clear screen mode.

To pause or stop projecting an image without turning the panel's power off, clear the screen by pressing the CLEAR button on the remote control unit. To restore the image and resume the presentation, press the CLEAR button again.

When the clear screen mode is selected, it is indicated on the remote control unit LCD as follows.



NOTE

The CLEAR mode can be used in both the NORMAL or the ENLARGE mode functions.

NOTES

(1) The selection returns to normal mode after any of the following operations:
- Powering on the QA-1150 (main unit).
- Pressing the FUNC and RESET buttons simultaneously on the remote control unit.
- Pressing the RESET button on the QA-1150 (main unit).
- Pressing RESET (MODE RESET) on the remote control unit.

(2) Press the RESET button on the remote control unit after any of the following operations:
- Powering on the QA-1150 (main unit).
- Changing the personal computer connections.

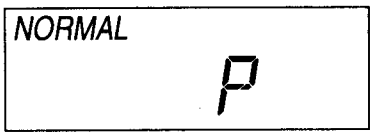
QA-1150 (main unit) display adjustment

The same adjustments can be made using the remote control unit as by key operations on the QA-1150 (main unit).

1) PHASE adjustment

If there is flickering on the screen, adjust the phase.
Press the PHASE button on the remote control unit, then use the +/- buttons to adjust the phase for the best image.

Phase adjustment indication

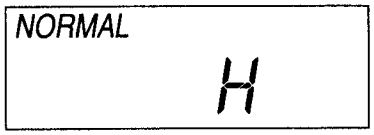


+: increases phase
-: decreases phase

2) H-POS adjustment

Use the H-POS adjustment to adjust the horizontal position of the image.
Press the H-POS button on the remote control unit, then use the +/- buttons to adjust the horizontal position.

Horizontal position adjustment indication

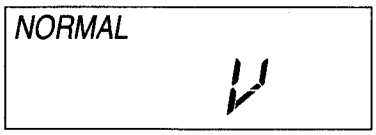


+: moves the image to the right
-: moves the image to the left

3) V-POS adjustment

Use the V-POS adjustment to adjust the vertical position of the image.
Press the V-POS button on the remote control unit, then use the +/- buttons to adjust the vertical position.

Vertical position adjustment indication



+: moves the image up
-: moves the image down

4) FREQ adjustment

Use the FREQ adjustment to adjust the frequency of the display data to match the data frequency of the personal computer.
Press the FREQ button on the remote control unit, then use the +/- buttons to adjust the frequency for the best image.

Frequency adjustment indication

+: increases frequency
-: decreases frequency

5) CONTRAST adjustment

Use the contrast adjustment to adjustment function to adjust the contrast of the projected image..
Press the CONTRAST button on the remote control unit, then use the +/- buttons to adjust the contrast for the best image.

Contrast adjustment indication

+: increases contrast
-: decreases contrast

Selecting the display color palette

Pressing the COLOR button toggles between the 512- and 185,000-color palettes. (Initial state is 185,000 colors.) Use the 512 mode with programs that use fewer than 256 colors. Use the 185,000 color mode with programs that use more than 256 colors or when using the video signals from a VCR.

RESET

Pressing the RESET button and FUNC button on the remote control unit simultaneously has the same effect as the RESET button on the main unit, except that it also changes the display mode to normal mode.

Mode reset

Pressing just the RESET button on the remote control unit returns the QA-1150 display mode to normal mode. The LCD panel on the remote control unit also changes to reflect this.

NOTE

When the QA-1150 is powered on, it is initially in normal mode, but it is possible for the remote control unit to indicate a different state. Pressing the RESET button on the remote control unit will always ensure that the remote control unit indicates the correct initial state, and synchronize it with the QA-1150 (main unit). (In this case do not press the FUNC button at the same time.)

COMP button operation

1) When using a VGA card in the 720-dot mode, the QA-1150 will compress the image to 640 dots. To view the image in the 720-dot mode (MDA or Hercules®), press the COMP button on the remote control unit. The leftmost 640-dot only will be displayed. To view the remaining portion of the image on the right side, select H-POS mode, and use the ▽ button on the QA-1150 panel or the - button on the remote control unit to shift the image left by 80 dots. Press the COMP button again returns back to the 640-dot compressed the display mode.
2) When using a Macintosh LC, pressing the COMP button on the remote control unit switches to the timing for the Macintosh LC. (For more details see the note on page 17.)

PC/VIDEO button operation

The QA-1150 is equipped with two video input terminals, a 26-pin COMPUTER connector for signal input from a computer, and an RCA VIDEO connector for input of a composite video source.

When the power is turned on, or following the ALL RESET operation, the QA-1150 is set to receive input signals from a computer through the COMPUTER connector. To switch the input to the VIDEO connector, press the PC/VIDEO button on the remote control unit.

Pressing the PC/VIDEO button again switches input back to the computer signal input terminal.

Remote control unit LCD backlighting

In dark surroundings it may be difficult to see the LCD panel on the remote control unit. In this case, press the FUNC button to switch on the backlighting. Note that the backlighting is also switched on for approximately five seconds each time any of the buttons is pressed.

Controlling the computer

The QA-1150 panel provides a serial output port. This is controlled by function button on the remote control. Using appropriate driver software and cable, a computer can be controlled during a presentation through the QA-1150's remote control.

The port is an eight pin asynchronous RS-232C serial port and is not buffered. Only one command can be transmitted at a given time. There is a total of two commands.

NOTE

Sharp does not supply the cable or driver software. This is available from a third party vendor. Please contact your local dealer. Programs can be written in the BASIC language (see the sample program on page 29).

TO USE THE QA-1150 SERIAL PORT

- Your computer must have an RS-232C serial port.
- Obtain driver software and a serial interface cable. (See page 49 for cable details.)
- Matching serial communication parameters must be set for the QA-1150 panel and the computer.

NOTE

See page 32 to set serial communication parameters on the QA-1150 panel. Check your computer's reference manual to set up the same parameters on your computer.

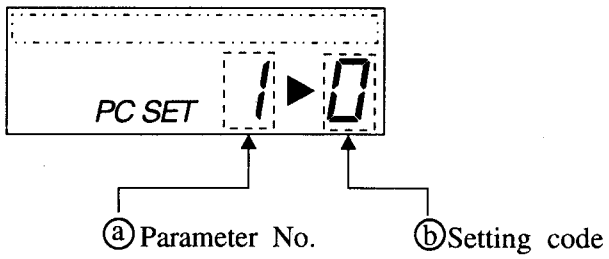
```
10 REM*****QA-1150 PC CONTROL DEMO PROGRAM*****
20 CLS:KEY OFF:A=0
30 SCREEN 1:COLOR ,1
40 COM(1) OFF
50 OPEN"COM1:300,E,7,1"AS #1
60 COM(1) ON
70 INPUT#1,A$
80 IF A$="-" THEN A=A-1:GOTO 100
90 IF A$="+" THEN A=A+1:GOTO 100
100 IF A=3 THEN A=0
110 IF A=-1 THEN A=2
120 IF A=0 THEN 150
130 IF A=1 THEN 160
140 IF A=2 THEN 170
150 CLS:DEF SEG=&HB800:BLOAD"A:FILE0",0:GOTO 70
160 CLS:DEF SEG=&HB800:BLOAD"A:FILE1",0:GOTO 70
170 CLS:DEF SEG=&HB800:BLOAD"A:FILE2",0:GOTO 70
180 END
```

1) Selecting the PC set mode

Before using the serial communications interface, it is necessary to set up the interface parameters to match those on the computer's serial port.

If this is not done, the previously set parameters will be adopted by default. (The QA-1150 saves the settings even when the power is switched off.)

To make these settings, press the FUNC button and PC SET button simultaneously on the remote control unit, to change to PC set mode.



* ⋯⋯ NORMAL, ENLARGE, or CLEAR is displayed in this space.

There are five parameters to set on the serial communications interface, identified by numbers from 1 to 5, as follows.

- Parameter 1: baud rate
  Determines the rate of data transfer in bits per second. Available settings: 300, 1200, 2400, 4800, and 9600 bps.
- Parameter 2: data bits
  Determines the data word length in bits. Available settings: 7 BIT and 8 BIT.
- Parameter 3: parity
  Determines the type of parity check used for serial communication. Available settings: EVEN, ODD, NONE, SPACE, and MARK.
- Parameter 4: stop bits
  Determines the number of stop bits. Available settings: 1 BIT and 2 BIT.
- Parameter 5: delimiter
  Determines the key code delimiter that is sent following each data code output in the PC CONTROL mode. Available settings are as follows.

  NON Data codes are output without delimiters.

  CR The carriage return code ($0D_H$) is automatically appended to each data code output.

  CRLF The carriage return and line feed codes ($0D_H$, $0A_H$) are automatically appended to each data code output.

  The LCD panel on the remote control unit shows the parameter number ⓐ and the setting code ⓑ. See the next section, "Serial communications parameters" for details.

2) Serial communications parameters

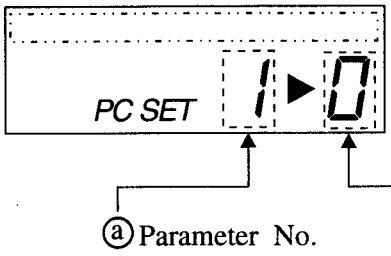
Parameter	Parameter number ⓐ	Setting code ⓑ	Setting
Transfer rate	1	0	300 bps
		1	1200 bps
		2	2400 bps
		3	4800 bps
		4	9600 bps
Data bits	2	7	7 bit
		8	8 bit
Parity	3	0	Even
		1	Odd
		2	None
		3	Space
		4	Mark
Stop bits	4	1	1 bit
		2	2 bit
Delimiter	5	0	NON
		1	CR
		2	CRLF

NOTE

When the data bits setting is 7 bit and the parity setting is None, the stop bits setting is fixed to 2 bit.

When the data setting is 8 bit, the stop bits is fixed to 1 bit except when the parity setting is None.

3) Setting the serial communications parameters



* ⋯ NORMAL, ENLARGE, or CLEAR is displayed in this space.

a) When switched to PC set mode, parameter number 1 is always displayed.

b) Use the shift buttons (▲ and ▼) to select the parameter number ⓐ to be changed.

▲ : decreases number
▼ : increases number

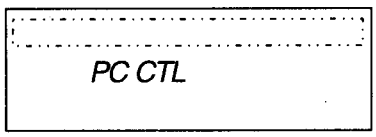
c) Use the +/- buttons to change the setting code ⓑ to the required value.

\+ : increases number
\- : decreases number

Note that both + and - buttons cycle round the range of valid numbers.

d) Once parameter number 5 is displayed, pressing ▼ transmits the settings to the QA-1150 main unit.

Transmission display



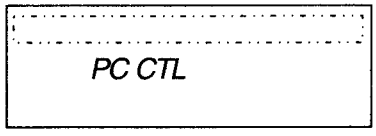
* ⋯ NORMAL, ENLARGE, or CLEAR is displayed in this space.

Do not, therefore, press the shift down button (▼) from parameter number 5 unless the settings are complete.

4) Operation in PC control mode

Pressing the PC CTL button on the remote control unit switches to PC control mode.

PC control mode indication



* ⋯ NORMAL, ENLARGE, or CLEAR is displayed in this space.

In PC control mode, pressing the + and - buttons sends the ASCII codes for those characters through the serial communications link to the personal computer, as shown in the following table.

Key	ASCII code
+	2BH
–	2DH

(The computer must be set up to utilize these codes being transmitted.)

Transmission indication

When the remote control unit is transmitting a signal to the main unit, the following indication flashes in the LCD panel.

* : A variety of messages are displayed in this space.

6. TROUBLESHOOTING

Before calling for service, please closely review the following troubleshooting information.

Problems:	**Possible Solution:**
(1) No image appears on the QA-1150 display area.	● Make sure that the panel's AC adaptor is properly connected. ● Make sure that the RGB signal cable is properly connected to both the computer and the panel. ● Verify that the panel's power switch is set to the on position. ● Verify that the computer's RGB signal output is compatible with the QA-1150's specifications. (See specifications on pages 39-49.) ● Verify that the RGB signal level is appropriate for your software. ● Check that the unit is not in clear mode. (Main unit and remote control unit) ● Check that the computer or video input selection is correct. ● If using a Laptop computer, check the computer's operation manual for external monitor hook up. ● Verify that the video source has power. ● Verify that the video source has tape or disc.
(2) Display is off-centered or flickering, certain images do not appear on the display, or the image appears distorted.	● Verify that the computer's RGB signal output is compatible with the QA-1150's specifications. (See specifications on pages 39-49.) ● Verify that the RGB signal level is suitable to your software. ● Press reset. ● Adjust horizontal and vertical to center image. ● Adjust analog level and phase. ● If the projected image flickers when using analog signals, adjust the contrast. Also try switching between the 512-color mode and the 185,000-color mode.

(3) The contrast of the display is not uniform.

- Make sure that the overhead projector is properly adjusted.
- Make sure that the overhead projector is a good quality **transmissive** type, and that the heat from the projector is not causing the temperature of the LCD to reach **45 °C(113°F)**.
- Make sure that the air flow vent is not blocked.
- Make sure the fan is working.

(4) The projected image is difficult to read, out of focus, or reversed.

- Make sure that the overhead projector is a good quality **transmissive** type (and not a compact reflective mirror type).
- Make sure that the overhead projector is properly focused. Note that the correct OHP focus for the QA-1150 differs slightly from that which is correct for a film-type transparency.
- Verify that the computer's RGB signal output is compatible with the QA-1150's specifications. (See specifications on pages 39-49.)
- If the QA-1150 is being used in a room with very bright lights, image quality may be substantially improved by dimming the lights.
- Check the front- or rear-projection selection.

(5) The remote control unit does not operate

- Are the batteries in the remote control unit low?
- Check that the batteries in the remote control unit are inserted with the correct polarity.
- Is the remote control unit pointing in the correct direction so that the infrared signal can bounce off the screen and reach the receptor on the QA-1150 unit?
- Check that the remote control transmitter is not too far from or too close to the QA-1150 main unit.
- Is there sunlight or bright illumination such as fluorescent light shining on the infrared receiver on the QA-1150 main unit?
- Check that no other remote control equipment is being used at the same time.

7. MAINTENANCE

The QA-1150 projection panel requires very little maintenance.

Check that the power switch is off before performing any maintenance on the panel.

Cleaning the top and bottom glass surfaces

When necessary, clean the glass surfaces of the panel using a soft cloth moistened with any standard glass cleaner.

Cleaning the plastic cabinet

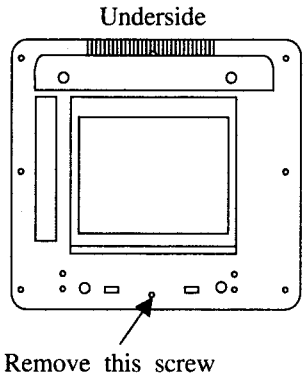
Wipe the cabinet using a soft cloth moistened in a diluted solution of mild detergent.

Cleaning the inner surfaces of the glass

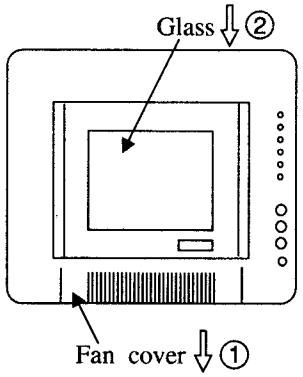
Ordinarily, the inner surface of the glass does not require cleaning. However, if dust should appear on the inside of the glass, very carefully remove the glass and wipe off the dust as follows. Procedures are the same for the glass on both sides of the QA-1150 panel.

- Cleaning the front glass

  (1) Turn the unit upside down, and remove the single screw indicated in the figure.

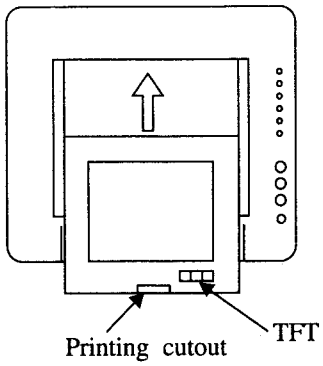


(2) Turn the unit the right way up, and remove first the fan cover, then the protective glass.



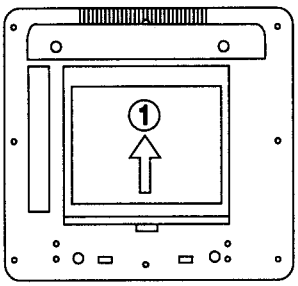
(3) Carefully wipe the underside of the glass. If there is any dust on the surface of the liquid crystal unit, remove it carefully.

(4) Replace the glass and fan cover in their original position, and fasten the screw.



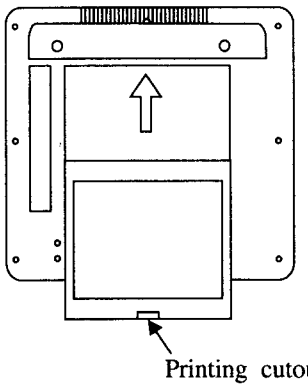
- Cleaning the underside glass

(1) Turn the unit over, then pushing in the direction of the arrow ①, lift up the glass as shown. (To remover the underside glass cover, it is not necessary to remove any screws.)



(2) Carefully wipe the inside surface of the glass. If there is any dust on the surface of the liquid crystal unit, remove it carefully.

(3) Replace the glass, ensuring that the printing cutout is at the bottom, as shown below. Push it fully into place in the direction shown by the arrow.



WARNING

The LCD panel is fragile. Be extremely careful to avoid striking it with sharp objects or pressing on it with excessive force.
Ensure that the glass covers are replaced exactly the same way round. Otherwise, the printed inscription may obscure the projection area.
Do not remove either cover while the unit is operating.
Do not use thinners or other volatile solvents, or chemically impregnated cleaning items on the unit. In contact with the plastic components these may cause discoloration or mechanical damage, and may result in failure of the unit.
The glass covers are fragile. Handle them carefully when removed from the unit.

NOTES

1) Do not clean with chemically-treated cloths, benzine, or paint thinner. These kinds of cleaning materials will chemically alter the cabinet material, resulting in cracking, peeling, and damage to the finish.
2) Do not spill any liquid into the unit. Liquid spills can cause irreparable damage.

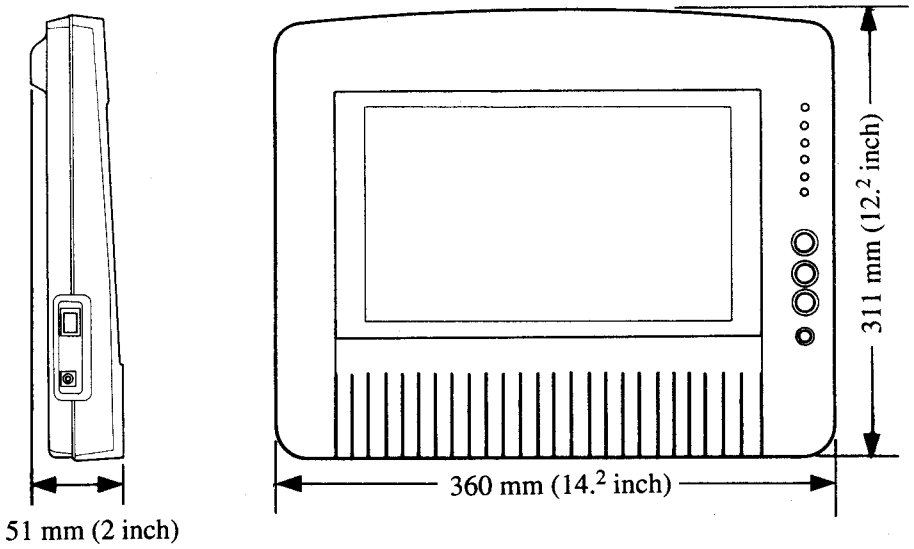
TRANSPORTING THE UNIT

When transporting the QA-1150 panel over a long distance, use a carrying case* to prevent excessive jarring or strong vibration.

*Optional Sharp soft and hard carrying cases are available. See your local dealer.

8. SPECIFICATIONS

(a) EXTERNAL DIMENSIONS



(b) MECHANICAL SPECIFICATIONS

1. Panel	Dimensions:	360(W) ×311 (D)×51(H) mm (14.2× 12.2× 2 inches)
	Net weight:	Approx. 3 kg/6.7 lbs (panel only)
2. LCD	LCD type:	8.4" (diagonal) Color TFT (Thin Film Transistor) LCD
	Display area:	170.88(H) x 129.6(V) mm (6.7 × 5.1 inches)
	Number of dots (pixels):	(640 × 3) (W) × 480 (H) (921,600 dots total)
	Pixel pitch:	0.267(H) × 0.27(V) mm
	Contrast Ratio:	60:1 (typical)

NOTE

Sharp warrants that the QA-1150 will provide a 99.996% usable active dot ratio. This means that out of the total of 921,600 dots, the QA-1150 may contain a maximum of 35 inactive dots.
These minute inactive dots may appear illuminated on the display, however, they will not affect picture quality, or the life expectancy of the unit.

(c) ENVIRONMENTAL CONDITIONS

Operating temperature:	0°C – +30°C (+32°F – +86°F)
Storage temperature:-	-20°C – +60°C (-4°F – +140°F)
Humidity:	Ta≤40°C: 90% RH
	Ta>40°C: Absolute humidity shall be less than Ta=40°C/90% RH (Ta: Temperature of the LCD)

WARNING

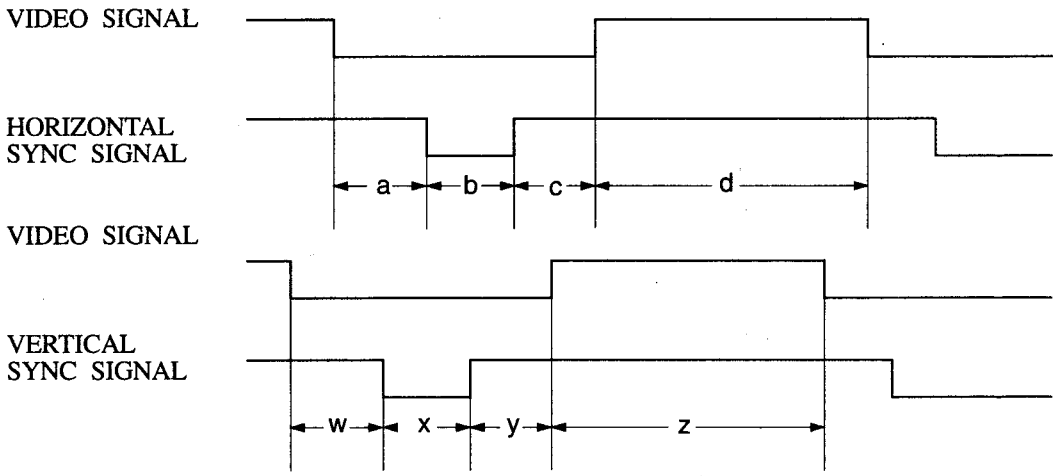
Do not use the QA-1150 panel with any overhead projector that can raise the temperature of the LCD to 45°C (113°F) under normal conditions.
Do not expose or store the QA-1150 in an area where there is direct sunlight on the panel for any period of time.

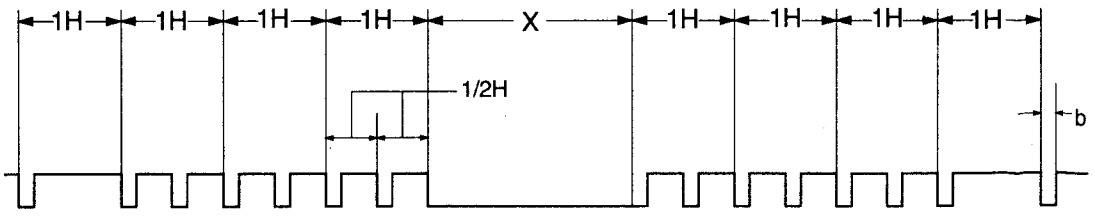
(d) ELECTRICAL SPECIFICATIONS

Power supply: AC 220V ±10% at 50 Hz

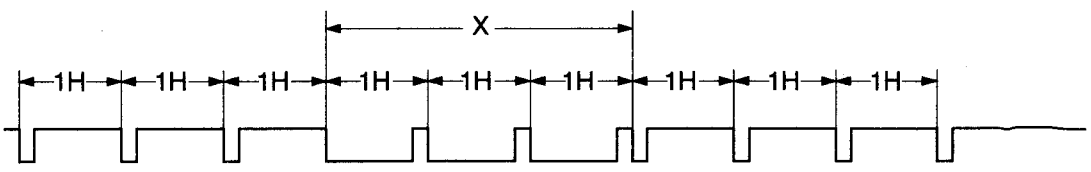
Power consumption: Approx. 32W AC adaptor input
Approx. DC12V, 1.95A panel only

Input signals: The video output signal timings of different types of video signals are shown below for reference.





(Csync for Old Macintosh II)



(Csync for New Macintosh II/Macintosh LC)

			IBM				IBM		IBM
			VGA	VGA•MCGA		VGA	EGA		CGA
							Text, 40 char	Graphic, 80 char	40 char, Graphic/80 char
			720 dot	640 dot			640 dot		640 dot
			400 line	400 line	350 line	480 line	350 line		200 line
Hsync	Front porch (a)	dots	18	16			–7	–3	95/103
	Sync (b)	dots	108	96			80	80	64/48
	Back porch (c)	dots	54	48			39	27	113/121
	Video period (d)	dots	720	640			640	640	640
	1H (a+b+c+d)	dots	900	800			752	744	912
		µs	31.777417	31.777557			46.256997	45.764901	63.696047
	1 dot	ns	35.308241	39.721946			61.511964	61.511964	69.842157
	1/H	kHz	31.468906	31.468881			21.618351	21.850806	15.699561
	1/dot	MHz	28.322	25.175			16.257		14.318
	Level		TTL	TTL			TTL		TTL
	Sync polarity	+/–	–	–	+	–	+		+
Vsync	Front porch (W)	H	13	13	38	11	1		25
	Sync (X)	H	2	2			13		3
	Back porch (Y)	H	34	34	59	32	2		34
	Video period (Z)	H	400	400	350	480	350		200
	1V (W+X+Y+Z)	H	449	449		525	366	366	262
		ms	14.26806	14.268123		16.683217	16.930061	16.749954	16.688364
	1/V	Hz	70.00	70.00		59.94	59.07	59.70	59.92
	Level		TTL	TTL	TTL	TTL	TTL		TTL
	Sync	+/–	+	+	–	–	–		+
VIDEO	Level			0.7Vp-p Max 75Ω Load			TTL		TTL
	Type			R, G, B			R, G, B r, g, b		R, G, B I
Remarks			AUTO SETUP Display will compress the image to 640 dots				Requires optional signal cable (sold separately)		Requires optional signal cable (sold separately) AUTO SETUP settings are made in the 40ch-Graphic mode

Timing Table

			IBM	Hercules		Hercules		Apple	Apple
			MDA	HGC/HGC+		Incolor		MAC II	MAC LC
				Text	Graphic	Text	Graphic	Video Card	
			720 dot	720 dot		720 dot		640 dot	640 dot
			350 line	350 line	348 line	350 line	348 line	480 line	480 line
Hsync	Front porch (a)	dots	9	7	–2	7	–2	64	78
	Sync (b)	dots	144	135	112	135	112	64	62
	Back porch (c)	dots	9	20	34	20	34	96	116
	Video period (d)	dots	720	720	720	720	720	640	640
	1H (a+b+c+d)	dots	882	882	864	882	864	864	896
		µs	54.253552	55.125	54.000	46.42105	45.473684	28.571429	28.595
	1 dot	ns	61.511964	62.500		52.631579		33.068783	31.914063
	1/H	kHz	18.432197	18.1406	18.5185	21.54195	21.990741	35.000	34.971149
	1/dot	MHz	16.257	16.000		19.000		30.240	31.334149
	Level		TTL	TTL		TTL		TTL	TTL
	Sync polarity	+/–	+	+		+		–	–
Vsync	Front porch (W)	H	0	0		0		3	3
	Sync (X)	H	16	16		16		3	3
	Back porch (Y)	H	4	4	6	4	6	39	39
	Video period (Z)	H	350	350	348	350	348	480	480
	1V (W+X+Y+Z)	H	370	370	370	370	370	525	525
		ms	20.073814	20.39625	19.980	17.175789	16.825263	15.000	15
	1/V	Hz	49.82	49.03	50.05	58.22	59.43	66.68	66.67
	Level		TTL	TTL		TTL		TTL	TTL
	Sync	+/–	–	–		–		–	–
VIDEO	Level		TTL	TTL		TTL		1.0 Vp-p Max. 75ΩLoad	0.7Vp-p Max. 75ΩLoad
	Type		Mono Video I	Mono Video I		R, G, B r, g, b		R,G,B	R,G,B
Remarks			Requires optional signal cable (sold separately)	Requires optional signal cable (sold separately)		Requires optional signal cable (sold separately)		• Sync signal is Csync • AUTO SETUP Display is set up for MAC II video card timing (see COMP key)	

Timing Table

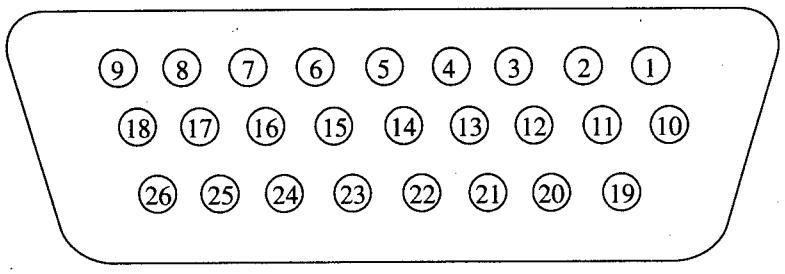
			AT&T		Apple	Apple
			6300WGS 6386WGS/6312WGS/6286WGS		Apple II/IIe/ II+/IIc/IIgs	MAC +/SE
			640 dot		560 dot	512 dot
			350 line	400 line	192 line	342 line
Hsync	Front porch (a)	dots	78		109	15
	Sync (b)	dots	104		170	64
	Back porch (c)	dots	106		73	113
	Video period (d)	dots	640		560	512
	1H (a+b+c+d)	dots	928		912	704
		µs	38.666667		63.696047	44.934641
	1 dot	ns	41.666667		69.842157	63.827614
	1/H	kHz	25.862069		15.699561	22.254545
	1/dot	MHz	24.000		14.318	15.6672
	Level		TTL		TTL	TTL
	Sync polarity	+/–	+		+	+
Vsync	Front porch (W)	H	25	0	33	0
	Sync (X)	H	16	16	3	4
	Back porch (Y)	H	41	16	34	24
	Video period (Z)	H	350	400	192	342
	1V (W+X+Y+Z)	H	432		262	370
		ms	16.704		16.688364	16.625817
	1/V	Hz	59.87		59.92	60.15
	Level		TTL		TTL	TTL
	Sync	+/–	+		+	+
VIDEO	Level		TTL		TTL	TTL
	Type		R,G,B I		R,G,B I	Mono Video I
Remarks			• Requires optional signal cable (sold separately) • Operates in the 400-line mode even during 350-line signal input		Requires optional A/D conversion adapter for composite signals (sold separately). Operates in the IBM CGA mode	Requires optional A/D conversion adapter (sold separately).

(e) INPUT TERMINALS

1) Computer video input connector

Pin assignments

1	Digital Secondary Green (g.I)	14	Analog Green Return
2	Digital Secondary Blue (b. Video)	15	Analog Red Return
3	Digital Secondary Red (r)	16	Digital GND
4	Analog Blue	17	N.C.
5	Analog Green	18	Test 3 (COMP)
6	Analog Red	19	Vsync (Digital)
7	Digital GND	20	Hsync/Csync(Digital)
8	Test 1 (MacintoshII/Macintosh LC)	21	N.C.
9	Test 2 (D/A)	22	N.C.
10	Digital Green	23	Digital GND
11	Digital Red	24	Digital GND
12	Digital Blue	25	Digital GND
13	Analog Blue Return	26	+ 12V



TEST 1 LOW (GND) : Apple® Macintosh II Video Card or Apple® Macintosh LC
OPEN (N.C.): Others

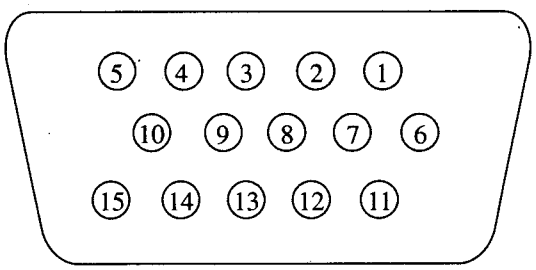
TEST 2 LOW (GND) : Analog RGB input
OPEN (N.C.): Digital RGB input

TEST 3 LOW (GND) : Composite video signal
OPEN (N.C.): Computer RGB signal

2) External monitor output connector

Pin assignments

1	Analog R (75Ω load)
2	Analog G (75Ω load)
3	Analog B (75Ω load)
6	Analog R Return
7	Analog G Return
8	Analog B Return
10	Digital GND
	Shield
11	Digital GND
13	Hsync (Digital)
14	Vsync (Digital)
4,5,9,12,15	Not connected



3)VGA/MCGA signal cable

Connect to IBM® PS/2 VGA or MCGA output port.

Pin assignments

Computer Pin No.	Connection	QA-1150 Pin No.	Signal
1	⟷	6	Analog R (75Ω load)
2	⟷	5	Analog G (75Ω load)
3	⟷	4	Analog B (75Ω load)
6	⟷	15	Analog R Return
7	⟷	14	Analog G Return
8	⟷	13	Analog B Return
10	⟷	24	Digital GND
		23	Shield
11	⟷	7	Digital GND
13	⟷	20	Hsync (Digital)
14	⟷	19	Vsync (Digital)
—		9	(Connected to pin 16 on panel)
		16	GND (Connected to pin 9 on panel)
4, 5, 9, 12, 15		1~3, 8, 10~12, 17 18, 21, 22, 25, 26	Not connected

4) Macintosh II signal cable

Connect to an Apple® Macintosh II video card or Macintosh LC output port.

Pin assignments

Computer Pin No.	Connection	QA-1150 Pin No.	Signal
2	⟷	6	Analog R (75Ω load)
5	⟷	5	Analog G (75Ω load)
9	⟷	4	Analog B (75Ω load)
1	⟷	15	Analog R Return
6	⟷	14	Analog G Return
13	⟷	13	Analog B Return
4	⟷	24	Digital GND
4	⟷	7	Digital GND
3	⟷	20	Csync (Digital)
4	⟷	7	Digital GND
—	⟷	9	Test 2 (Connected to pin 16 on panel)
		16	GND (Connected to pin 9 on panel)
7, 8, 10, 11, 12, 14, 15		1~3, 10~12, 17~ 19, 21, 22, 26	Not connected
4	⟷	23	Shield
—	⟷	8	Test 1
		25	Digital GND

5) External Macintosh monitor cable

Connect to external Macintosh monitor input

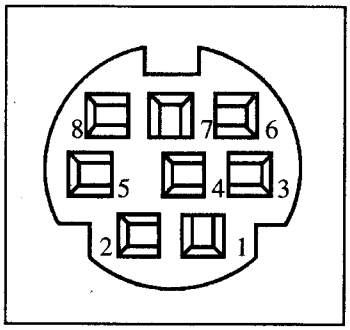
Pin assignments

QA-1150 Pin No.	Connection	Computer Pin No.	Signal
1	⟷	2	Analog R (75Ω load)
2	⟷	5	Analog G (75Ω load)
3	⟷	9	Analog B (75Ω load)
6	⟷	1	Analog R Return
7	⟷	6	Analog G Return
8	⟷	13	Analog B Return
10	⟷	4	Digital GND
Shield	⏚	Shield	Shield (GND)
11	⟷	14	Digital GND
13	⟷	3	Csync (Digital)
14	⟷	12	Vsync (Digital)
—			
4, 5, 9, 12, 15		7, 8, 10, 11, 15	Not connected

(f) Serial Interface Port

8-pin mini-connector

Pin assignments	
1	Signal GND
2	Transmit Data (output)
3	Receive Data (input)
4	Request to Send (output)
5	Clear to Send (input)
6	Data Set Ready (input)
7	Signal GND
8	Data Terminal Ready (output)



Condition for data transfer

In order for the QA-1150 to transfer data to the computer, the CTS (Clear to Send) and DSR (Data Set Ready) input lines on the computer side must both be ON.

(g) Included accessories

(1) VGA/MCGA signal cable

(2) Macintosh II signal cable

(3) External Macintosh monitor cable

(4) AC adaptor

(5) AC cable

(6) Remote control unit

(7) Two "AA" Alkaline batteries for remote control unit

(8) Operation manual

(9) Video adjustment tool

This apparatus complies with the requirements of EN 55014, 02.1987 and BS 800:1988.

Dieses Gerät stimmt mit den Bedingungen der EN 55014, 02.1987 überein.

Cet appareil répond aux spécifications de la EN 55014, 02.1987.

Dit apparaat voldoet aan de vereiste EN 55014, 02.1987.

Apparatet opfylder kravene i EN 55014, 02.1987.

Questo apparecchio è stato prodotto in conformità alle EN 55014, 02.1987.

Este aparelho responde às especificações da EN 55014, 02.1987.

Este aparato cumple las especificaciones de la EN 55014, 02.1987.

Αύτή ή συσκευή τηρεί τίς προδιαγροφές τής EN 55014, 02.1987.